

## CLAIMS

What is claimed:

1. A concentric coaxial cutting machine comprising:

5 a transverse support member having directly or indirectly mounted thereon;  
a headstock member including;  
a headstock spindle member mounted to said headstock member  
including;  
a drive spindle rotationally mounted to said  
headstock spindle member and adapted to  
rotationally retain one end of an object to be  
concentrically cut;

10 a tailstock member including;  
a tailstock spindle member mounted to said tailstock member  
including;  
a tailstock spindle rotationally mounted to said  
tailstock spindle member and adapted to  
retain an opposite end of said object;

15 a drive assembly in rotational communication with said drive spindle and  
adapted to rotate said drive spindle around a common axis with  
said tailstock spindle; and,

20 a first chain saw variably aligned at an angle to said common axis and  
adapted to concentrically cut said object from at least said opposite  
end.

25

2. The concentric coaxial cutting machine according to claim 1 further comprising an accessory table mounted on said transverse support member wherein said accessory table is adapted to support additional cutting, roughing or finishing equipment.

5

3. The concentric coaxial cutting machine according to claim 1 wherein said headstock member or said tailstock member is repositionable about a long dimension of said transverse support member.

10

4. The concentric coaxial cutting machine according to claim 1 wherein said tailstock spindle member is repositionable about a long dimension of said tailstock member.

15

5. The concentric coaxial cutting machine according to claim 1 wherein said tailstock spindle member is repositionable perpendicularly to said transverse support member.

6. The concentric coaxial cutting machine according to claim 1 wherein said first chain saw is mounted on said tailstock member.

20

7. The concentric coaxial cutting machine according to claim 1 wherein said first chain saw is repositionable about a long dimension of said tailstock member.

25

8. The concentric coaxial cutting machine according to claim 1 wherein said first chain saw is repositionable perpendicularly to said transverse support member.

9. The concentric coaxial cutting machine according to claim 1 wherein said transverse support member comprises a vertical conduit.

10. The concentric coaxial cutting machine according to claim 9 wherein said headstock member comprises a horizontal base mounted to one end of said vertical conduit.

5 11. The concentric coaxial cutting machine according to claim 9 wherein said headstock spindle member comprises a horizontal rotary table mounted on said horizontal base having said drive spindle is centered thereon.

10 12. The concentric coaxial cutting machine according to claim 11 wherein said horizontal rotary table includes a plurality of T-slots included in a top surface thereof or an attachable multi-jawed chuck.

15 13. The concentric coaxial cutting machine according to claim 10 wherein said tailstock member comprises a horizontal arm mounted at about an opposite end of said vertical conduit; said tailstock member being vertically repositionable along a substantial length of said vertical conduit and horizontally repositionable about a radius of said vertical conduit.

20 14. The concentric coaxial cutting machine according to claim 13 wherein said tailstock member is securely maintained in a position by a clamp mounted to a bottom of said tailstock member.

15 15. The concentric coaxial cutting machine according to claim 13 wherein said first chain saw is mounted to said horizontal arm and is further vertically and horizontally repositionable by a plurality of jackscrew drives in repositionable communication with said first chain saw.

25 16. The concentric coaxial cutting machine according to claim 1 wherein said first chain saw is replaceable with another cutting, grinding or finishing tool.

30

17. The concentric coaxial cutting machine according to claim 13 wherein said tailstock spindle member is mounted to said horizontal arm and is further vertically and horizontally repositionable by a plurality of jackscrew drives in repositionable communication with said tailstock spindle member.

5

18. The concentric coaxial cutting machine according to claim 15 wherein said chain saw is pivotally mounted to said horizontal arm such that a cutting chain associated with said chain saw engages said object at said angle.

10

19. The concentric coaxial cutting machine according to claim 1 further comprising a second chain saw mounted to said transverse support member and variably aligned at said angle to said common axis but in opposition to said first chain saw.

15 20. The concentric coaxial cutting machine according to claim 19 wherein said transverse support member includes;

20 a first horizontal rail;

25 a second horizontal rail aligned in parallel to said first horizontal rail;

30 a plurality of periodically spaced perpendicular cross members in rigid communication with said first and said second horizontal rails;

35 a first traveling tool arm member slidably mounted to said first horizontal rail;

40 a second traveling tool arm member slidably mounted to said first horizontal rail in opposition to said first traveling tool arm member; and,

45 wherein said headstock member and said tailstock member are slidably mounted on said second horizontal rail.

50

21. The concentric coaxial cutting machine according to claim 20 wherein said first chain saw is variably mounted to said first traveling tool arm member and said second chain saw is variably mounted to said second traveling tool arm member.

30

22. The concentric coaxial cutting machine according to claim 20 wherein said headstock member and said tailstock member are slidably mounted to said second horizontal rail.

5

23. The concentric coaxial cutting machine according to claim 20 wherein said transverse support member further includes;  
a first roller support member slidably mounted to said first horizontal rail;  
a second roller support member slidably mounted to said second horizontal rail;  
10 wherein said first and said second support roller members are adapted to support said object at least when said object is being concentrically cut.

24. The concentric coaxial cutting machine according to claim 1 wherein said drive assembly includes;

15 a variable speed electric motor having a first pulley mounted on a shaft associated with said variable speed electric motor;  
a second pulley mounted on said drive spindle; and,  
a drive belt in rotational communication with said first and said second pulleys.

25. A concentric coaxial cutting machine comprising:

5 a transverse support means for supporting directly or indirectly thereon;

10 a drive spindle means for rotationally retaining one end of an object to be concentrically cut;

15 a tailstock spindle means for rotationally retaining an opposite end of said object to be concentrically cut, wherein said tailstock spindle means is aligned in opposition to said headstock spindle means along a common axis;

20 a first chain saw means for concentrically cutting from at least said opposite end of said object, wherein said first chain saw means is variably aligned at an angle to said common axis; and,

25 a drive assembly means for turning said drive spindle means around said common axis when said object is being concentrically cut.

26. The concentric coaxial cutting machine according to claim 25 further comprising an accessory table means variably mounted on said transverse support means for supporting additional cutting roughing or finishing equipment means.

27. The concentric coaxial cutting machine according to claim 25 further comprising a second chain saw means variably mounted on said transverse support means and variably aligned at angle to said common axis but in opposition to said first chain saw means for concentrically cutting from said one end of said object.

28. The concentric coaxial cutting machine according to claim 27 further comprising means for varying said angle to said common axis in which said first or said second chain saw means concentrically cuts said object.

29. The concentric coaxial cutting machine according to claim 25 further comprising means for varying a position of said drive spindle means or said tailstock spindle means about a long dimension of said transverse support means.

5 30. The concentric coaxial cutting machine according to claim 27 further comprising means for varying a mounting position of said first or said second chain saw means about a long dimension of said transverse support means.

10 31. The concentric coaxial cutting machine according to claim 27 further comprising means for varying a mounting position of said first or said second chain saw means about a perpendicular dimension to said transverse support means.

15 32. The concentric coaxial cutting machine according to claim 25 further comprising a plurality of support roller means for supporting said object during said concentrically cutting of said object.

20 33. The concentric coaxial cutting machine according to claim 27 wherein said accessory table means includes means for varying a mounting position of said accessory table means.

34. The concentric coaxial cutting machine according to claim 25 wherein said object includes wood, ice or plastic.

35. A method for using the concentric coaxial cutting machine of claim 25 comprising the steps of:

- a. securing said object between said a drive spindle means and said tailstock spindle means,
- 5 b. activating said drive assembly means,
- c. aligning said first chain saw means to a desired concentric cutting angle,
- d. positioning said first chain saw means to a desired concentric cutting location on one end of said object,
- e. activating said first chain saw means, and
- 10 f. concentrically cutting said object.

36. The method according to claim 36 further comprising repeating steps 35.c – 35.g.

37. The method according to claim 35 further comprising the steps of;

- 15 a. rotating said object 180 degrees to allow cutting of an opposite end of said object, and
- b. repeating steps 35.c – 35.f on said opposite end of said object